10:30 AM **3/16/01** - Danh Nguyen

SWSI Req'ts Matrix

The following table allocates the requirements specified in Sections 3 through 7

(Based on the SWSI SRD [FINAL DRAFT] dated March 7th 2001)

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3	***System Requirements***									
3.1	*Introduction*									
3.2	*Software*									
3.2.1	SWSI software requirements will be derived by lower level SWSI documents from other requirements									
3.2.2	Any SWSI software to be hosted on the SWSI client shall validly execute on any client platform supporting the Java 2.0 Virtual Machine.							ALL	Client	
3.2.3	Any SWSI software to be hosted on the SWSI client shall be packaged such that it can be distributed to and/or accessed by users via electronic media.							Release 1	Client	
3.2.4	Custom developed SWSI software shall be designed to facilitate future modifications.									
3.3	*System Components*									
3.3.1	Lower level SWSI documents will derive additional requirements for these components from other requirements									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.3.2	*SWSI Client Workstation*									
3.3.2.1	The SWSI Client Workstation will be provided and maintained by the user									
3.3.2.2	The SWSI client shall be capable of supporting the Java 2.0 Virtual Machine							ALL	Client	
3.3.2.3	For Internet and Open IONET users who will use SN services provided via interaction with the NCCDS, the SWSI Client Workstation shall be capable of establishing and sustaining all connections with the SWSI Open Server applicable to the SWSI's interface with the NCCDS							Build 2, Release 1	Client, Application Server, Isolator, SNIF	
3.3.2.4	For Internet and Open IONET users who will use SN services provided via interaction with the DAS, the SWSI Client Workstation shall be capable of establishing and sustaining all connections with the SWSI Open Server applicable to the SWSI's interface with the DAS							Build 2 Release 1	Client, Application Server, Isolator, SDIF	
3.3.2.5	For Closed IONET users who will use SN services provided via interaction with the NCCDS, the SWSI Client Workstation shall be capable of establishing and sustaining all connections with the SWSI Backend Server applicable to the SWSI's interface with the NCCDS							Build 2, Release 1	Client, Application Server, Isolator, SNIF	
3.3.2.6	For Closed IONET users who will use SN services provided via interaction with the DAS, the SWSI client shall be capable of establishing and sustaining all connections with the SWSI Backend Server applicable to the SWSI's interface with the DAS							Build 2, Release 1	Client, Application Server, Isolator, SDIF	
3.3.3	*SWSI Open Server*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.3.3.1	For Internet and Open IONET users who will use SN services provided via interaction with the NCCDS, the SWSI open server shall function as a proxy for the SWSI Backend Server. For these users, the SWSI open server shall be capable of establishing and sustaining all connections with the SWSI Backend Server applicable to the SWSI's interface with the NCCDS							Build 2, Release 1	Application Server	
3.3.3.2	As needed, the SWSI open server shall route requests from the SWSI client to the NCCDS and return responses from the NCCDS to the SWSI Client Workstation. In all cases, these exchanges will be via the NISN secure gateway and the SWSI backend server							Build 2, Release 1	Client, Application Server, Isolator, SNIF	
3.3.3.3	For Internet and Open IONET users who will use SN services provided via interaction with the DAS, the SWSI open server shall function as a proxy for the SWSI Backend Server. For these users, the SWSI open server shall be capable of establishing and sustaining all connections with the SWSI Backend Server applicable to the SWSI's interface with the DAS							Build 2, Release 1	Application Server	
3.3.3.4	As needed, the SWSI open server shall route requests from the SWSI client to the DAS and return responses from the DAS to the SWSI client. In all cases, these exchanges will be via the NISN secure gateway and the SWSI backend server							Build 2, Release 1	Client, Application Server, Isolator, SDIF	
3.3.4	*SWSI Backend Server*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.3.4.1	For Closed IONET users who will use SN services provided via interaction with the NCCDS, the SWSI backend server shall be capable of establishing and sustaining all applicable connections with the NCCDS							Release 1	Client, Application Server, Isolator, SNIF	
3.3.4.2	For Closed IONET users who will use SN services provided via interaction with the DAS, the SWSI backend server shall be capable of establishing and sustaining all applicable connections with the DAS							Release 1	Client, Application Server, Isolator, SDIF	
3.3.4.3	For Internet and Open IONET users who will use SN services provided via interaction with the NCCDS, the SWSI backend server shall be capable of establishing and sustaining all applicable connections with the NCCDS. In all cases, these exchanges between Internet and Open IONET users and the SWSI backend server will be via the NISN secure gateway and the SWSI open server							Build 2, Release 1	Client, Application Server, Isolator, SNIF	
3.3.4.4	For Internet and Open IONET users who will use SN services provided via interaction with the DAS, the SWSI backend server shall be capable of establishing and sustaining all applicable connections with the DAS. In all cases, these exchanges between Internet and Open IONET users and the SWSI backend server will be via the NISN secure gateway and the SWSI open server							Build 2, Release 1	Client, Application Server, Isolator, SDIF	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.3.4.5	In support of Internet and Open IONET users, the SWSI backend server shall be capable of establishing Secure Socket Layer (SSL) connections with the SWSI open server via the NISN secure gateway							Release 1	Application Server, Isolator	
3.4	*External Interfaces*									
3.4.1	*SWSI Client Workstation* For any combination of Internet, Open IONET and Closed IONET SWSI client users, the SWSI servers shall be capable of supporting simultaneous connections with multiple SWSI clients. Refer to 4.8.1							ALL	Client, Application Server, Isolator	
3.4.2	*NISN Secure Gate*									
3.4.2.1	All communications between the SWSI open server and the SWSI backend server shall be channeled through the NISN secure gateway using encrypted Secure Socket Layer (SSL) connections							Release 1	Application Server, Isolator	
3.4.2.2	When communicating with each other, the SWSI open server and the SWSI backend server shall not employ protocols or communications techniques that will be blocked by the NISN secure gateway							Release 1	Application Server, Isolator, Open TUT Server	
3.4.2.3	The SWSI shall not require the NISN secure gateway to modify its rule set in response to SWSI configuration changes, or in response to the addition or removal of SWSI customers							Release 1	Application Server, Isolator, Open TUT Server	
3.4.3	*Network Control Center Data System*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.4.3.1	For any SWSI client at any time, the SWSI shall be capable of communicating with either the NCCDS located in the operational NCC environment or with the NCCDS located in the ANCC. Refer to 3.7. This implies that the SWSI will be capable of simultaneously communicating with the operational NCCDS for some clients and with the ANCC's NCCDS for other clients							Release 1	SNIF	
3.4.3.2	All communications between the SWSI and the NCCDS shall comply with 451-ICD-NCCDS/MOC							Build 2, Release 1	SNIF	
3.4.3.3	The SWSI shall employ hypertext transfer protocol (HTTP) to retrieve TDRSS Unscheduled Time (TUT) information from the NCCDS. The SWSI shall employ Transmission Control Protocol/Internet Protocol (TCP/IP) for all other communications with the NCCDS. The SWSI will not use Nascom 4800 Bit Block (BB) protocol or File Transfer Protocol (FTP) for any of its communications with the NCCDS							Build 2	Open TUT Server	
3.4.3.4a	The SWSI shall automatically transmit Schedule Result Request messages on the NCCDS Schedule Status service connection.							Release 1	SNIF	
3.4.3.4b	The SWSI shall automatically transmit User Performance Data Request messages on the NCCDS User Performance Data service connection							Release 1	SNIF	
3.4.3.5	For all applicable message formats and message format parameters, the SWSI shall exercise the "full support" customer options. The SWSI will not exercise the "baseline" customer options							Release 1	SNIF	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.4.3.6	For all applicable message formats and message format parameters, the SWSI shall exercise the "normal user" options. The SWSI will not exercise the "Shuttle" options							Release 1	SNIF	
3.4.4	*Demand Access System:* All communications between the SWSI and the DAS shall comply with 451-ICD-DAS/SWSI							Build 2, Release 1	SDIF	
3.5	*Installation Requirements*									
3.5.1	General Requirement: The following requirements apply regardless of whether the NCC facility is located at GSFC or within the DSMC at the WSC in New Mexico									
3.5.2	Power Requirements: The SWSI servers shall be capable of successful operation using the power available within the NCC facility. The SWSI servers shall not require either a quantify or quality of electric power that exceeds the capabilities of the NCC facility									
3.5.3	Environmental Requirements: The SWSI servers shall be capable of successful operation within the ambient temperature and humidity ranges available within the NCC facility. The SWSI servers shall not require modification of either the temperature or humidity control capabilities of the NCC facility									
3.5.4	*Site Preparation Requirements*									
3.5.4.1	The equipment installation shall be documented by an Engineering Change (EC)									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.5.4.2	The EC shall list of all necessary power and signal cables									
3.5.4.3	Cable installation shall be in accordance with the requirements of STDN-SPEC-6, GSFC Specification Installation Requirements for STDN Equipment									
3.5.4.4	All cable fabrication shall be in accordance with the requirements of STDN-SPEC-4, Section 3									
3.5.5	Equipment Installation: Equipment installations shall be in accordance with STDN-SPEC-6, Installation Requirements for STDN Equipment									
3.5.5.1	Floor panels shall be in accordance with the requirements of STDN-SPEC-6									
3.6	*Security*									
3.6.1	Both due to the missions it directly supports and to its interface with the NCCDS, the NASA Mission (MSN) information category requirements as defined by the *NASA Procedures and Guidelines for Security of Information Technology*, NPG 2810.1 are applicable to the SWSI							Release 1	Isolator, Open TUT Server, Sys Admin Security Tools	
3.6.2	In the absence of waivers, the SWSI shall satisfy the Baseline Information Technology (IT) Security Requirements applicable to the MSN information category as specified in Appendix A of NPG 2810.1							Release 1	Isolator, Open TUT Server, Sys Admin Security Tools	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.6.3	For some requirements, waivers may be requested in accord with the provisions of NPG 2810.1									
3.6.4	For all aspects of communications via the IONET, the SWSI shall comply with *IP Operation Network (IOnet) Security Plan*, 290-003. However in case of conflicts between NPG 2810.1 and 290-003, NPG 2810.1 has precedence							Release 1	Application Server, Isolator, Open TUT Server	
3.7	*Test Requirements*									
3.7.1	In order to support Engineering Interface (EIF) testing, the SWSI shall provide the capability for SWSI clients to communicate with the ANCC's NCCDS via the SWSI servers							Build 2, Release 1	Client, Application Server, Isolator, SNIF	
3.7.2	The SWSI shall provide customers with the capability to segregate their test data from their operational data							Release 1	Isolator	
3.8	*User Interface*									
3.8.1	The SWSI shall provide users of the SWSI Client software with a Graphical User Interface (GUI). The general features provided by the SWSI GUI shall include, but not necessarily be limited to (refer to SWSI Req'ts Doc.: 3.8.1.a through 3.8.1.h)							ALL	Client	
3.8.2	*SN Services*									
3.8.2a	The SWSI shall provide users of the SWSI client with all user interface features necessary to support the SWSI functional requirements applicable to NCCDS interactions							ALL	Client	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.8.2b	The SWSI shall provide users of the SWSI client with all user interface features necessary to support the SWSI functional requirements applicable to DAS interactions							Build 2, Release 1	Client	
3.8.2c	The SWSI shall provide users of the SWSI client with user interface features providing integrated control and information presentation capabilities for operationally related groups of SN services regardless of whether the individual services are provided via interaction with the NCCDS or with the DAS (e.g., integrated presentation of the service configurations of forward services provided via NCCDS interactions and return services provided via DAS interactions)							Release 1	Client, Isolator	
3.8.3	*System Information*									
3.8.3a	The SWSI shall provide users of the SWSI client with access to information pertaining to the current status of each applicable SWSI communications connection							Release 1	Client, Application Server, Isolator	
3.8.3b	The SWSI shall provide users of the SWSI client with notification when the status of an applicable SWSI connection changes							Release 1	Client, Application Server, Isolator	
3.8.3c	The SWSI shall provide users of the SWSI client with access to any available system status information provided by the SWSI servers							ALL	Client, Application Server, Isolator	
3.8.4	*Operator Log On*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.8.4.1	*Customer Authorization/ Authentication Data*									
3.8.4.1.1	*Maintenance of Customer Authorization Data:* The SWSI will provide the capabilities related to the maintenance of customer authorization /authentication data							Release 1	Data Admin	
3.8.4.1.1a	The SWSI shall provide authorized SWSI administrative personnel with the capability to enter, modify, and delete customer authorization data							Release 1	Data Admin	
3.8.4.1.1b	The SWSI shall provide authorized SWSI administrative personnel with the capability to review previously entered customer authorization data							Release 1	Data Admin	
3.8.4.1.1c	The SWSI shall retain customer authorization data until deleted by authorized SWSI administrative personnel							Release 1	Data Admin	
3.8.4.1.2	*Data: The SWSI will retain customer data related to operator log on*							Release 1	Data Admin	
3.8.4.1.2a	For each user, the SWSI shall retain a user ID, a password, and a passphrase							Build 2, Release 1	Application Server, Isolator	
3.8.4.1.2b	For each user, the SWSI shall retain a list of SICs for the which the user is authorized							ALL	Data Admin	
3.8.4.1.2c	For each combination of user and SIC, the SWSI shall retain a list of valid Support Identifiers (SUPIDENs)							ALL	Data Admin	
3.8.4.1.2d	For each user, the SWSI shall retain information indicating whether the user interacts with the NCCDS, with the DAS, or both							Release 1	Data Admin	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.8.4.1.2e	For each combination of NCCDS user and SUPIDEN, the SWSI shall retain a User ID and Password to be used in messages transmitted to the NCCDS. These User IDs and passwords will not necessarily be the same as the User IDs and passwords used to logon to the SWSI							Release 1	Data Admin	
3.8.4.2	*Log On Process*									
3.8.4.2.1	The SWSI shall provide authorized users with the capability to logon to the SWSI							ALL	Client, Application Server, Isolator	
3.8.4.2.2	The SWSI shall validate a user's logon based on the user ID, password, and passphrase entered by the user							Build 2, Release 1	Application Server, Isolator	
3.8.4.2.3	Within 10 seconds of its entry, the SWSI shall respond to each logon attempt with an indication of whether it has been accepted or rejected							ALL	Client, Application Server, Isolator	
3.8.4.2.4	The SWSI shall employ digital certificates in this validation process, and shall rely upon the NASA Certificate Authority to provide digital certificates to SWSI customers							FUTURE		SWSI will be delivered using the trial Phaos digital certificates since NASA does not issue a server based digital certificate as of 4/16/2001

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.8.4.2.5	The SWSI shall allow connections to be established between a SWSI client and SWSI servers only after a valid user logon from the SWSI client							ALL	Client, Application Server, Isolator	
3.8.4.2.6	The SWSI shall allow only NCCDS users to access the SWSI NCCDS functions. This includes establishing connections with the NCCDS for the user							Build 2, Release 1	Client, Application Server, Isolator, SNIF, Open TUT Server	
3.8.4.2.7	The SWSI shall allow only DAS users to access the SWSI DAS functions. This includes establishing connections with the DAS for the user							Build 2, Release 1	Client, Application Server, Isolator, SDIF	
3.8.4.2.8a	For NCCDS users, the SWSI shall provide the user with the capability to select connection with either the operational NCCDS or with the ANCC's NCCDS							Build 2, Release 1	Client	This is implied from 3.8.4.2.8b. The operational data is communicated with NCCDS while the test data with ANCC
3.8.4.2.8b	For NCCDS users, the SWSI shall provide the user with the capability to select use of operational or test data							Build 2, Release 1	Client	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
3.8.4.2.9	The SWSI shall provide users with the capability to log-off							ALL	Client, Isolator	
3.8.4.2.10	The SWSI shall maintain a record of currently logged-on users and log of login attempts at all times							Release 1	Isolator	
4	***Functional and Performance Requirements***									
4.1	*Introduction*									
4.2	*NCCDS Interactions*									
4.2.1	*General*									
4.2.1.1	The SWSI provides SN customers with the capability to interface with the NCCDS to perform the following functions related to scheduled SN services: Scheduling, Service Reconfiguration, Performance Data Monitoring, Vector Storage and Transmission							Release 1	Client, Application Server, Isolator, SNIF	
4.2.1.2	In all cases, the SWSI shall ensure that each NCCDS user is precluded from accessing any other user's messages or data							Release 1	Client, Application Server, Isolator	
4.2.2	*Scheduling*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.2.1	*Customer Data Management:* For each SIC supported by the SWSI, the SWSI shall provide authorized SWSI administrative personnel with the capability to create and maintain all customer data necessary to perform the scheduling function. In particular, this will include a set of service specification codes (SSCs) corresponding to the set of SSCs maintained for the customer in the NCCDS database, and the list of valid SUPIDENs for the SIC. The SWSI shall provide the user with the capability to review and reference this data in the process of entering schedule requests							Release 1	Data Admin	
4.2.2.2	*Schedule Requests*									
4.2.2.2.1	*General:* The SWSI will provide the user with the capability to enter schedule requests and transmit them to the NCCDS.							Build 2, Release 1	Client, Application Server, Isolator, SNIF	
4.2.2.2.1a	The SWSI shall provide the user with the capability to enter the following types of schedule requests: Schedule Add Request (SAR), Schedule Delete Request (SDR), Schedule Replace Request (RR), Alternate SAR (ASAR), Schedule Wait List Request (WLR)							Build 1, Build 2	Client	SAR in Build 1
4.2.2.2.1b	Based on the user's logon information, the SWSI shall provide the user with the capability to select the SUPIDEN to be used in the request from a list of SUPIDENs for which the user is authorized							Build 1	Client, Isolator	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.2.2.1c	For each of these types of schedule requests, the SWSI shall provide the user with the capability to create a new request by copying and editing a previous request.							Build 1, Build 2, Release 1	Client	SAR in Build 1 ASAR, RR in Build 2
4.2.2.2.1d	For each of these types of schedule requests, the SWSI shall provide the user with the capability to use all options specified for that type of request by 451-ICD-NCCDS/MOC							Release 1	Client, SNIF	
4.2.2.2.1e	For each of these types of schedule requests, the SWSI shall format the request in compliance with the applicable tables of 451-ICD-NCCDS/MOC. In particular, the SWSI shall not transmit schedule requests to the NCCDS that will result in Schedule Result Messages (SRMs) with a combination of result and explanation codes indicating invalid formatting							Build 2, Release 1	SNIF	
4.2.2.2.1f	The SWSI shall not transmit schedule requests to the NCCDS that will result in a lack of response from the NCCDS due to failure to pass authorization checks							Build 2, Release 1	SNIF	
4.2.2.2.1g	Upon completion of the user's entry of a request, the SWSI shall format, store, and then transmit the request							ALL	Client, Isolator, SNIF	
4.2.2.2.1h	The SWSI shall retain all stored requests until the request expires according to administrative personnel-specified criteria							Release 1	Data Admin	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.2.2.2	*Schedule Add Request*: The SWSI will allow the user to enter and transmit SARs at any time without regard to the relationship of the SAR and any previous schedule request							Build 1	Client, Isolator	SARs get stored in the database
4.2.2.2.3a	*Schedule Delete Request*: The SWSI shall ensure that each SDR contains a valid reference to an active event, or to a previously transmitted SAR, ASAR, or RR							Build 2	Client, Isolator	
4.2.2.2.3b	*Schedule Delete Request*: SWSI shall provide the user with displays of the current active events and previously transmitted schedule requests							Build 2	Client, Isolator	
4.2.2.2.4a	*Schedule Replace Request:* SWSI shall ensure that each RR contains a valid reference to an active event, or to a previously transmitted SAR, ASAR, or RR							Build 2	Isolator	
4.2.2.2.4b	*Schedule Replace Request:* SWSI shall provide the user with displays of the current active events and previously transmitted schedule requests							Build 2	Client, Isolator	
4.2.2.2.5a	*Alternate SAR*: SWSI shall ensure that each ASAR contains a valid reference to a previously transmitted SAR, ASAR, or RR							Build 2	Isolator	
4.2.2.2.5b	*Alternate SAR:* SWSI shall provide the user with displays of previously transmitted schedule requests							Build 2	Client, Isolator	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.2.2.6a	*Schedule Wait List Request:* SWSI shall ensure that each WLR contains a valid reference to a previously transmitted SAR, ASAR, or RR and that the previously transmitted SAR, ASAR, or RR has been declined by the NCCDS, i.e., the NCCDS has transmitted an SRM with result code of 02							Build 2	Client	
4.2.2.2.6b	*Schedule Wait List Request:* SWSI shall provide the user with displays of previously transmitted schedule requests that indicate whether the request has been declined by the NCCDS							Release 1	Client, Isolator, SNIF	
4.2.2.3	*TDRSS Scheduling Windows*									
4.2.2.3a	The SWSI shall provide the user with the capability to import files of TSWs into the SWSI. These TSW files must be in a format compatible with the TSW message format specified by 451-ICD-NCCDS/MOC							Release 1	Client, Application Server, Isolator, SNIF	
4.2.2.3b	The SWSI shall provide the user with the capability to select imported TSW files for transmission to the NCCDS							Release 1	Client, SNIF	
4.2.2.3c	Based on the SIC within each selected file, the SWSI shall verify that the user is authorized to send this TSW data to the NCCDS							Release 1	Client	
4.2.2.3d	For each validly selected file, the SWSI shall format the selected TSWs into one or more valid TSW messages, and transmit them to the NCCDS							Release 1	SNIF	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.2.4	TDRSS Unscheduled Time The SWSI shall retrieve current TDRSS Unscheduled Time (TUT) information from the NCCDS and store it so that it is accessible to Internet and Open IONET SWSI users							Build 2	Open TUT Server	
4.2.2.5	*Schedule Results*									
4.2.2.5.1	*General* In response to schedule requests, the NCCDS will respond with SRMs and with User Schedule Messages (USMs)									
4.2.2.5.2a	Upon receipt of an *Schedule Result Messages* (SRM), the SWSI shall: Notify the user that the SRM has been received,							Build 2	Client, Application Server, Isolator, SNIF	
4.2.2.5.2b	Upon receipt of an SRM, the SWSI shall provide the user with the capability to review the SRM							Release 1	Client, Isolator, SNIF	
4.2.2.5.2c	Upon receipt of an SRM, the SWSI shall Use the result and explanation codes from the SRM to update the status information for the request or event referenced by the SRM							Release 1	SNIF	
4.2.2.5.2d	Upon receipt of an SRM, the SWSI shall provide the user with the capability to review the requests or events with the updated status information							Release 1	Client, Isolator	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.2.5.2e	Upon receipt of an SRM, the SWSI shall, if the result code is 15, delete the referenced event (if any) and annotate the referenced request to indicate that it has been deleted							Build 2	SNIF	
4.2.2.5.3a	Upon receipt of an *User Schedule Messages* (USM), the SWSI shall notify the user that the USM has been received							Release 1	Client, Isolator, SNIF	
4.2.2.5.3b	Upon receipt of an USM, the SWSI shall use the USM to update the SWSI's schedule							Release 1	SNIF	
4.2.2.5.3c	Upon receipt of an USM, the SWSI shall provide the user with the capability to review the updated schedule, including the new USM							Release 1	Client, Isolator	
4.2.3	*Service Reconfiguration*									
4.2.3.1	*General: The* SWSI will provide the user with the capability to enter Ground Control Message Requests (GCMRs) and transmit them to the NCCDS							Build 2	Client, Isolator, SNIF	
4.2.3.1a	SWSI shall provide the user with the capability to enter the following types of GCMRs: User Reacquisition Request, User Reconfiguration Request, Forward Link Sweep Request, Forward Link Effective Isotropic Radiated Power (EIRP) Reconfiguration Request, Expanded User Frequency Uncertainty Request, Doppler Compensation Inhibit Request.							Build 2	Client, Isolator, SNIF	
4.2.3.1b	Based on the user's logon information, the SWSI shall provide the user with the capability to select the SUPIDEN to be used in the request from a list of SUPIDENs for which the user is authorized							Build 2	Client	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.3.1c	For each of these types of GCMRs, the SWSI shall provide the user with the capability to use all options specified for that type of request by 451-ICD-NCCDS/MOC							Build 2	Client	
4.2.3.1d	For each of these types of GCMRs, the SWSI shall format the GCMR in compliance with the applicable tables of 451-ICD-NCCDS/MOC. In particular, the SWSI shall not transmit GCMRs to the NCCDS that will result in a GCM Status Message indicating that the GCMR has been rejected by the NCCDS due to invalid formatting or due to reference to an inapplicable service type							Build 2	Client, Isolator, SNIF	
4.2.3.1e	The SWSI shall not transmit GCMRs to the NCCDS that will result in a lack of response from the NCCDS due to failure to pass authorization checks							Build 2	SNIF	
4.2.3.1f	Upon completion of the user's entry of a request, the SWSI shall transmit and store the request							Build 2	Client, Isolator, SNIF	
4.2.3.2	*Current Service Configuration Displays*: SWSI shall provide the user with the capability to review the configuration of each currently active service and to use this information in the entry of GCMRs							Build 2	Client, Isolator	
4.2.3.2a	For each service type, the service configuration display will provide detailed information at the individual service parameter level. This level of detail is comparable to that of the USM formats specified in 451-ICD-NCCDS/MOC							Build 2	Client, Isolator	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.3.2b	As of service start time, the information in the service configuration display will reflect the initial state of the service as specified in the applicable USM							Build 2	Client, Isolator	
4.2.3.2c	Upon a successful service reconfiguration, the information in the service configuration display will updated to reflect the reconfigured parameter or parameters							Release 1	Client, Isolator, SNIF	
4.2.3.3a	Upon receipt of a GCM Status Message, the SWSI shall notify the user that the GCM Status Message has been received, and show whether the status message indicates that a GCMR was rejected by the NCCDS, rejected by WSC, or accepted by WSC							Release 1	Client, Isolator, SNIF	
4.2.3.3b	Upon receipt of a GCM Status Message, the SWSI shall allow the user to view the GCM Status Message							Release 1	Client, Isolator	
4.2.3.3c	Upon receipt of a GCM Status Message, the SWSI shall update the information used in the service configuration display if the GCM Status Message indicates that the GCMR was accepted by WSC							Release 1	Client, Isolator	
4.2.3.4	Upon receipt of a GCM Disposition Message, the SWSI shall notify the user that the GCM Disposition Message has been received, and show whether the message indicates that a reconfiguration request was acknowledged or not acknowledged by WSC							Release 1	Client, Isolator, SNIF	
4.2.4	*Performance Data Monitoring*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.4.1	*General* In response to messages received from WSC, the NCCDS will transmit the following performance data messages to the SWSI: User Performance Data (UPD) messages, Return Channel Time Delay (RCTD) messages, Time Transfer Messages (TTMs), and Acquisition Failure Notification (AFN) messages.									
4.2.4.2	*User Performance Data Messages*									
4.2.4.2a	For each TDRS, the SWSI shall be capable for receiving one UPD message each five seconds for each SWSI user with an active service on that TDRS							Release 1	SNIF	
4.2.4.2b	Upon receipt of a UPD message, the SWSI shall verify that it applies to a SUPIDEN for which there is a logged-on SWSI user. If it does, the SWSI shall make the information from the UPD message available for presentation to that user in real time							Release 1	Client, Isolator, SNIF	
4.2.4.2c	SWSI shall provide users with the following capabilities and options for the presentation of UPD message information: Default display formats, dynamic updates as new messages are received, display of most recently received message, user customized display formats, Limit checking of user selected parameters according to user specified criteria, Summary displays, display of UPD data in its "as received" state without application of any of the user options.							Release 1	Client, Isolator, SNIF	
4.2.4.3	*Return Channel Time Delay Messages (RCTD)*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.4.3a	Upon receipt of a RCTD message, the SWSI shall verify that it applies to a SUPIDEN for which there is a logged-on SWSI user. If it does, the SWSI shall notify the user of the receipt of the RCTD message							Release 1	Client, Isolator, SNIF	
4.2.4.3b	SWSI shall store the RCTD message in a file on the Client Workstation such that it is available for later processing by customer applications							Release 1	Client, Isolator, SNIF	
4.2.4.4	*Time Transfer Messages (TTM)*									
4.2.4.4a	Upon receipt of a TTM, the SWSI shall verify that it applies to a SUPIDEN for which there is a logged-on SWSI user. If it does, the SWSI shall notify the user of the receipt of the TTM							Release 1	Client, Isolator, SNIF	
4.2.4.4b	SWSI shall store the TTM in a file on the Client Workstation such that it is available for later processing by customer applications							Release 1	Client, Isolator, SNIF	
4.2.4.5	Upon receipt of an Acquisition Failure Notification Messages (AFN) message, the SWSI shall verify that it applies to a SUPIDEN for which there is a logged-on SWSI user. If it does, the SWSI shall notify the user of the receipt of the AFN							Release 1	Client, Isolator, SNIF	
4.2.5	*Vector Storage and Transmission*									
4.2.5a	Based on the user's logon information, the SWSI shall provide the user with the capability to select the SIC to be used in vectors from a list of SICs for which the user is authorized							Release 1	Client	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.2.5b	The SWSI shall provide the user with the capability to enter the latitude, longitude, and altitude of a customer spacecraft							Release 1	Client	
4.2.5c	The SWSI shall be capable of converting a user-entered set of latitude, longitude, and altitude data for a customer spacecraft into a type 8 (stationary) Improved Interrange Vector (IIRV) for that spacecraft							Release 1	Client	
4.2.5d	The SWSI shall provide the user with the capability to directly enter IIRVs							Release 1	Client	
4.2.5e	The SWSI shall provide the user with the capability to import files of IIRVs							Release 1	Client	
4.2.5f	The SWSI shall provide the user with the capability to select one or more IIRVs for transmission to the NCCDS							Release 1	Client	
4.3	***DAS Interactions***									
4.3.1	*General*									
4.3.1.1	The SWSI provides SN customers with the capability to interface with the DAS to perform the following functions related to SN services: Service Planning, Service Allocation, Real-Time Operations, Service Performance Monitoring, Data Retrieval, Customer State Vector Updates, Receipt of DAS Alerts.							Build 2, Release 1	Client, Isolator, SDIF	Service Planning, Service Allocation, and Real-Time Operations in Build 2
4.3.1.2	The SWSI shall ensure that each SN demand access service user is precluded from accessing any other user's messages or data							Release 1	Client, Isolator	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.3.1.3	For each SIC supported by the SWSI, the SWSI shall provide authorized SWSI administrative personnel with the capability to create and maintain all customer data necessary to interact with the DAS. In particular, this will include a set of service specification codes (SSCs) defining the default service configurations for the SIC. For each SIC, the SWSI shall be capable of retaining a minimum of 10 SSCs. The SWSI shall provide the user with the capability to review and reference this data in the process of entering requests							Release 1	Data Admin	
4.3.2	*Service Planning*									
4.3.2a	The SWSI shall provide the user with the capability to request a report on the resource allocations available to the user							Build 2	Client, Isolator, SDIF	
4.3.2b	Upon receipt of the response from the DAS, the SWSI shall notify the user and make the response available for review							Build 2	Client, Isolator, SDIF	
4.3.3	*Service Allocation*									
4.3.3a	SWSI shall provide the user with the capability to request the following: Allocation of a specified resource, Deletion of a pending or ongoing resource allocation, Modification of a pending resource allocation, A list of all currently planned events for the user, The details of a specified planned event.							Build 2, Release 1	Client, Isolator, SDIF	
4.3.3b	Upon receipt of the response from the DAS, the SWSI shall notify the user and make the response available for review							Release 1	Client, Isolator, SDIF	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.3.4	*Real-Time Operations*									
4.3.4a	SWSI shall provide the user with the capability to request the following: 1) Reconfiguration of the values of a specified list of parameters for an ongoing service, 2) Reacquisition of the return service signal							Build 2	Client, Isolator, SDIF	
4.3.4b	Upon receipt of the response from the DAS, the SWSI shall notify the user and make the response available for review							Build 2	Client, Isolator, SDIF	
4.3.5	*Service Performance Monitoring*									
4.3.5a	The SWSI shall provide the user with the capability to request that DAS user performance data be enabled or disabled							Release 1	SDIF	
4.3.5b	Upon receipt of the response from the DAS, the SWSI shall notify the user and make the response available for review							Release 1	Client, Isolator, SDIF	
4.3.5c	If user performance data was enabled, the SWSI shall provide this data to the user as it is received from the DAS							Release 1	Client, Isolator, SDIF	
4.3.5d	The SWSI shall be capable of receiving one DAS user performance data message per minute for each active service with ongoing DAS support							Release 1	Client, Isolator, SDIF	
4.3.6	*Data Retrieval*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.3.6a	SWSI shall provide the user with the capability to request the following: A search for archived data within a specified time window, Playback of specific archived data, Deletion of a previously playback request, Modification of a previously playback request.							Release 1	Client, Isolator, SDIF	
4.3.6b	Upon receipt of the response from the DAS, the SWSI shall notify the user and make the response available for review							Release 1	Client, Isolator, SDIF	
4.3.7	*Customer State Vector Updates*									
4.3.7a	SWSI shall provide the user with the capability to enter and transmit a state vector							Release 1	Client, Isolator, SDIF	
4.3.7b	Upon receipt of the response from the DAS, the SWSI shall notify the user and make the response available for review							Release 1	Client, Isolator, SDIF	
4.3.8	*DAS Alerts* Upon receipt of a DAS alert, the SWSI shall alert the user implied by the SIC specified in the DAS alert message and make the text of the DAS alert message available for review by that user. If the DAS alert message does not apply to a specific user (i.e., SIC = "0000"), the SWSI shall alert all users and make the text of the DAS alert message available for review by all users							Release 1	Client, Isolator, SDIF	
4.4	*Database Management*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.4.1	*General Features*: The SWSI shall provide a database management capability for all SWSI data. The general database management features of the SWSI shall include, but not necessarily be limited to (refer to SWSI Req'ts Doc.: 4.4.1a through 4.4.1l)							ALL	Data Admin	
4.4.2	SN Service Data									
4.4.2.1	The SWSI shall provide all data storage and retrieval capabilities necessary to support the requirements for SN services specified herein. This includes the capability to store and retain requests sent to the NCCDS and to the DAS							ALL	Isolator, SNIF, SDIF	
4.4.2.2	For each SIC, the SWSI shall partition data such that some of the data for that SIC can be entered, deleted, or modified only by authorized SWSI administrative personnel while the remainder of the data for that SIC can be entered, deleted, or modified by SWSI client users authorized for that SIC. In general, privileges related to entry, deletion, or modification of relatively static data such as SSCs will be restricted to authorized SWSI administrative personnel while privileges related to entry, deletion, or modification of time-dependent data such as schedule requests will be restricted to SWSI client users							Release 1	Client, Isolator	
4.4.2.3	SWSI shall be capable of automatically purging data related to SN services based on criteria specified by authorized SWSI administrative personnel							Release 1	Data Admin	
4.4.2.4	The SWSI shall be capable of deleting data related to SN services under the direct control of authorized SWSI client users.							ALL	Client, Isolator	

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.4.3	*System Data*									
4.4.3.1	The SWSI shall provide SWSI administrative personnel with the capability to access the contents of server log files							Release 1	Data Admin	
4.4.3.2	The SWSI shall provide SWSI client users with the capability to access the contents of client log files containing data for which the user is authorized							ALL	Client	
4.5	*Logging*									
4.5.1	SWSI shall be capable of logging and delogging: incoming external messages, outgoing external messages, alerts sent to SWSI clients, records pertaining to the establishment and termination of communications connections, records pertaining to SWSI system failures, records pertaining to SWSI database failures, records pertaining to successful SWSI logon attempts, and records pertaining to rejected SWSI logon attempts							Release 1	Client, Application Server, Isolator, SNIF, SDIF, Open TUT Server	
4.5.2	The SWSI shall provide SWSI administrative personnel with the capability to selectively control the logging and delogging of all of the above							Release 1	Data Admin	
4.5.3	The SWSI shall provide SWSI client users with the capability to selectively control delogging of all of the above data for which the user is authorized							Release 1	Client	
4.6	*System Performance*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
4.6.1	The SWSI shall have the capacity to store data for a minimum of 100 customer spacecraft. The SWSI shall allow for one set of operational data and for at least one set of test data for each spacecraft							Release 1	Data Admin, Isolator	
4.6.2	For any combination of Internet, Open IONET and Closed IONET SWSI clients, the SWSI servers shall be capable of supporting simultaneous connections with a minimum of fifty SWSI clients							Release 1	Client, Application Server, Isolator	
4.6.3a	The SWSI response time from the perspective of the SWSI client shall not be more than 10 seconds greater than the NCCDS or DAS response time from the perspective of the SWSI backend server							Release 1	Client, Application Server, Isolator	
4.6.3b	The SWSI response time from the perspective of the SWSI client shall not be greater than 10 seconds							Release 1	Client, Application Server, Isolator	
5	***Operations and Maintenance***									
5.1	*General*									
5.1.1	SWSI servers shall be capable of continuous unattended operation							Release 1		
5.1.2	SWSI servers shall be designed and configured such that routine system maintenance operations and routine system administrative functions can be executed without rendering the capabilities of the servers operationally unavailable to the SWSI clients							Release 1		
5.2	*Reliability, Maintainability, and Availability*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
5.2.1	*Reliability*									
5.2.1.1	The measure of reliability for the SWSI servers is the Mean Time Between Failures (MTBF). The MTBF is defined as the 10-year life cycle of a fully operational SWSI divided by the predicted number of failures. The MTBF is determined in accordance with MIL-HDBK-217, Reliability Prediction of Electronic Equipment									
5.2.1.2	The Parts Count Reliability prediction method of MIL-HDBK-217 shall be used in the initial stages of system design									
5.2.1.3	The reliability prediction method shall shift to the Parts Stress Analysis Prediction method, or other reliability modeling technique approved by NASA, at the time when a firm, detailed parts list is available									
5.2.1.4	The MTBFs of the SWSI servers shall be determined in accordance with MIL-HDBK-217, Reliability Prediction of Electronic Equipment									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
5.2.2	*Maintainability:* The maintainability requirement for the SWSI servers is stated in terms of Mean Time To Repair (MTTR). The MTTR is the quotient obtained by dividing the sum of the times to repair failures by the number of failures. Excluded from time to repair are the time to obtain parts, components, tools, or supplies not provisioned at the SWSI facility, the time for essential personnel not scheduled to be at the SWSI facility to be notified of the failure and to travel to the SWSI facility, and the time to develop and configure software corrections. Based on the preceding definitions, the SWSI servers shall have an MTTR no greater than 60 minutes									
5.2.3	*Availability*									
5.2.3.1	*Inherent Availability*									
5.2.3.1.1	Inherent Availability (Ai) is the probability that a system or equipment, when used under stated conditions in an ideal support environment (i.e., using available tools, spares, and personnel) will operate within specifications at all times. It excludes preventive maintenance actions, logistics supply time, and administrative downtime and is expressed as: Ai = MTBF/(MTBF + MTTR)									
5.2.3.1.2	The inherent availability of any individual SWSI server for any period of 10,000 hours shall be 0.9998									
5.2.3.2	*Operational Availability*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
5.2.3.2.1	The Operational Availability (Ao) of the SWSI servers is defined in terms of the availability of the SWSI backend servers to the SWSI Open IONET clients excluding any times during which the SWSI backend servers are unavailable due to failure of the Open IONET, the Closed IONET, or the NISN secure gateway									
5.2.3.2.2	SWSI operational availability for any period of 10,000 hours interval shall be 0.9999. Redundant paths may be used in achieving this Ao									
5.3	*System Maintenance* SWSI shall have the resources, personnel, and logistics support required to maintain, modify, and repair hardware and maintain modify and enhance software. Hardware maintenance is performed under a formally established system maintenance program that includes both Preventive Maintenance and Corrective Maintenance procedures.									
5.3.1	*General Requirements*									
5.3.1a	The contractor shall develop procedures using 500-TIP-2111, Content Specification for Operation and Maintenance Manuals, as a guideline									
5.3.1b	Any state-of-the-art techniques that are developed for the SWSI shall be included in the procedures.									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
5.3.2	*Hardware Maintenance:* Hardware maintenance will be conducted at two levels: First level maintenance is conducted to support the inherent availability requirements by replacement of Line Replaceable Units (LRUs) and line replaceable items within LRUs. Second level maintenance consists of the repair, adjustment, and testing of LRUs removed from service during first level maintenance actions									
5.3.2.1	Identification of Line Replaceable Units (LRU): LRUs shall include rack-mounted equipment drawers and panels and other assemblies that can be removed by unplugging power and signal connectors without physically disturbing other LRUs									
5.3.2.1a	First level maintenance will include scheduled preventive maintenance.									
5.3.2.1b	First level maintenance will include fault isolating to the level of an LRU									
5.3.2.1c	Fault isolation to the level of a line replaceable item within an LRU (if any) shall be performed if the time required is consistent with the operational maintainability requirement									
5.3.2.1d	First level maintenance shall include replacement of a failed LRU or line replaceable element within an LRU									
5.3.2.1e	First level maintenance shall include testing to ensure that the system/subsystem has been restored to operational condition									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
5.3.2.1f	First level maintenance will include alignment and tuning									
5.3.2.3a	*Second Level Maintenance:* Second level maintenance actions will include localization of a failure to the piece-part or equipment component level, as appropriate									
5.3.2.3b	Second level maintenance actions will include disassembly and removal of the failed piece-part or equipment component									
5.3.2.3c	Second level maintenance actions will include replacement of failed elements and reassembly									
5.3.2.3d	Second level maintenance actions will include bench testing to ensure performance to the specified level									
5.3.3	*Software Maintenance*									
5.3.3.1	SWSI system shall provide capability for personnel to be cognizant of anomalous software behavior									
5.3.3.2	SWSI system shall provide capability for personnel to initiate software trouble reports									
5.3.3.3	SWSI system shall provide capability for personnel to install vendor-supplied software fixes and upgrades							ALL	CDS	
5.3.4	SWSI shall be configured redundantly (e.g., a prime and a backup) for both Open and Closed IONET. Therefore, there is no requirement for maintaining an on-site supply of spare components							Release 1	HA	
6	*Documentation*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
6.1	SWSI operations personnel shall be provided with all documentation needed to perform the functions indicated above									
6.2	All documentation shall be developed in accordance with the Data Requirements List (DRL) and Data Item Descriptions (DIDs). The DRL lists each document to be provided and the DIDs describe the purpose, content, and format of each document									
6.3	Document requirements list (TBS)									
7	***Trainning***									
7.1	*General:* The training polic ies, plans, and procedures shall provide for orderly transition into sustained operations and maintenance									
7.1.1	*General Requirements*									
7.1.1.1	The training program shall include a definition of the qualifications required by operations and maintenance personnel to meet position description skill requirements									
7.1.1.2	A training plan to define the phasing, methods and techniques for achieving the requisite skill levels, using curricula and course materials for skill/qualification areas within each position description shall be included									
7.1.1.3	Training devices and equipment shall be included									
7.1.1.4	Administrative support to implement the training program shall be included									
7.1.2	*Skill Area Requirements*									

REQ'TS No.	REQUIREMENT TEXT	TEST CASES	Test Case Run Time	Test Start	Test End	Tester	PASS/ FAIL	Build	System	Comments
7.1.2.1a	Operator training shall cover the SWSI network overview									
7.1.2.2b	Operator training shall cover the SWSI concept of operation									
7.1.2.3c	Operator training shall cover detailed SWSI operational procedure									
7.1.2.2a	Maintenance training for both hardware and software shall cover the SWSI maintenance concept									
7.1.2.2b	Maintenance training for both hardware and software shall cover diagnostics and troubleshooting									
7.1.2.2c	Maintenance training for both hardware and software shall cover detailed repair procedures and techniques including the use of available tools and repair equipment									
7.1.2.2d	Maintenance training for both hardware and software shall cover SWSI software maintenance concepts									
7.1.2.2e	Software maintenance training shall include debugging techniques									
7.1.2.2f	Training shall cover maintenance of both operational and support software									
7.1.3	*Training Devices and Equipment*									
7.1.3.1	SWSI training devices and equipment for maintenance training shall be specified in the Training Plan									
7.1.4	*Training Support*									
7.1.4.1	Administrative support for training shall provide for the testing and certification of students									